

CLAIMS

1. A yarn guide roll for guiding at least one yarn on a circumferential surface thereof, comprising
5 an elongate support which defines a central axis,
a tubular roll sleeve,
a plurality of bearings rotatably mounting said tubular roll sleeve upon the support for rotation about said central axis,
10 at least one of said bearings comprising a radially operative magnetic bearing which comprises a plurality of bearing pole windings distributed about the circumference of the roll sleeve, with each bearing pole winding having a predetermined pole cross section, and wherein at least
15 one of the bearing pole windings has a pole cross section which is larger or smaller than the pole cross section of at least one of the other bearing pole windings.
2. The yarn guide roll of Claim 1, wherein the
20 arrangement of the bearing pole windings and/or the sizes of the pole cross sections of the bearing pole windings are selected as a function of a load that acts upon the roll sleeve.
- 25 3. The yarn guide roll of Claim 1, wherein the bearing pole winding or windings with a smaller pole cross section is or are arranged in a circumferential range of the roll sleeve, in which the load is directly introduced into the roll sleeve.
- 30 4. The yarn guide roll of Claim 1, wherein the bearing pole winding or windings with the larger pole cross section is or are arranged in the circumferential range of the roll sleeve, which is opposite to the

circumferential range of the roll sleeve, in which the load is directly introduced into the roll sleeve.

5 5. The yarn guide roll of Claim 1, wherein the bearing pole windings are distributed along the support in a plurality of adjacent bearing planes.

10 6. The yarn guide roll of Claim 5, wherein at least some of the bearing pole windings are distributed along the support with an angular displacement from bearing plane to bearing plane.

15 7. The yarn guide roll of Claim 5, wherein the bearing pole windings are individually arranged in the bearing planes.

20 8. The yarn guide roll of Claim 5, wherein the bearing pole windings are paired in facing relationship in the bearing planes.

25 9. The yarn guide roll of Claim 1, wherein a sensor is associated with each of the bearing pole windings for detecting the position of the roll sleeve, and that the sensors and the bearing pole windings are connected to a bearing control unit.

30 10. The yarn guide roll of Claim 9, wherein the bearing pole windings are each controllable by the bearing control unit.

11. The yarn guide roll of Claim 1, wherein the roll sleeve is supported by two radially operative magnetic bearings and a thrust bearing, with the bearing pole windings of each of the magnetic bearings including

at least one bearing pole winding with a larger or smaller pole cross section than that of at least one of the other bearing pole windings.

5 12. The yarn guide roll of Claim 1, further comprising a heating device mounted between the support and the sleeve for heating the sleeve during operation of the roll.

10 13. The yarn guide roll of Claim 12, wherein the heating device comprises an induction heater.

15 14. The yarn guide roll of Claim 1, wherein the elongate support is tubular, and further comprising a drive shaft extending coaxially through the support and being attached to said sleeve.

20 15. The yarn guide roll of Claim 1, wherein the elongate support is non-tubular and is fixed to a machine frame at at least one end of the support.